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resignations, and 705 names were dropped (October 1) because of over two years of arrears; the total loss was 1,037. Four members were transferred from annual to life membership. The net gain in total membership, for the half-year, is 105. The membership data for the last year and a half are tabulated below:

	Sept. 30, 1920	March 31, 1921	Sept. 30, 1921	March 31, 1922
No. of members in good standing..	10,002	9,637	10,160	9,911
Total enrollment..	11,442	11,524	11,547	11,652

It is clear that the membership is gradually increasing, but there still remain many persons in the United States and Canada who are vitally interested in scientific and educational progress but who are not yet enrolled in the association. Members of the association should do all in their power to increase the membership and thus strengthen the organization.

A local branch of the association was organized in the fall of 1921 and is in successful operation. This is the State College (Pennsylvania) Local Branch. Its officers are: *chairman*, A. J. Wood; *secretary*, J. Ben Hill. It has an enrollment of 53 members of the association. Fifteen new members have been secured through its activities. The State College Branch holds occasional meetings throughout the year.

Plans for the summer meeting of the association, jointly with the Pacific Division, which is to occur at Salt Lake City, June 22-24, 1922, are progressing satisfactorily. Details of these plans are in charge of Mr. W. W. Sargeant, Golden Gate Park, San Francisco, secretary of the Pacific Division, and the general secretary of the association, Dr. D. T. MacDougal, Carmel, California. The chairman of the local committee for the Salt Lake City meeting is Professor E. G. Titus, 215 S. Third East, Salt Lake City, Utah.

Card lists of all the members enrolled in each section of the association have been prepared and will soon be in the hands of the secretaries of the respective sections, together with a steel cabinet for each set of cards. These section lists will be kept continually corrected, by

means of cards sent out from the permanent secretary's office. Each member's addressograph plate now shows, besides his name and address and the formula of his membership status, one, two, or three letters denoting the section or sections in which he is enrolled. Thus, ABD indicates that the member on whose plate this letter combination appears is enrolled in Sections A, B and D, and a corresponding card is found in each of the three section lists. When a member has indicated more than three sections as his preferences, the first three on his list have been indicated on the plate. In cases where no section has been named by a member, it has been impossible to enroll him in any particular section, and he is regarded as a member of the association in general. When members receive cards, etc., from the permanent secretary's office, they are requested to scrutinize the addressograph impression and inform the office if any corrections are needed with respect to their section enrollment.

Financially, the association is more than holding its own. The permanent secretary's reserve or emergency fund amounted (on March 31) to \$5,855.09, \$1,500 having been transferred to this fund on March 25. Of this, \$1,000 is specially reserved from the current funds of 1922 for meeting the extra expense of publishing the next volume of Summarized Proceedings, which is to appear in the spring of 1925, following the next four-yearly (Washington) meeting. After all liabilities are cared for, over \$2,000 is available (March 31, 1922) for appropriation from the current funds of the present fiscal year, which ends October 1, 1922.

#### SECTION M—ENGINEERING AND ASSOCIATED SOCIETIES

THE resuscitation of Section M at the recent Toronto meeting of the American Association for the Advancement of Science resulted in a program of considerable length and much diversity. The attendance was good, and the interest was sustained to the end. Sir Clifford Sifton, formerly chairman of the Commission of Conservation, Canada, gave the opening address on Tuesday afternoon, his subject being "Some Views on the Development of the Nat-

ural Resources of Canada." He dealt, among other things, with the fuel problems of Canada in their relation to the development of hydro-electric power, and with the general conditions obtaining at the present time in the rural districts.

Papers by Paul Heymans, now of the Massachusetts Institute of Technology, and Professor Charles Mannebeck, of the University of Louvain, Belgium, on "Optical Determination of Stress in Engineering Structures" and "Return Current along Submarine Cables," respectively, were read by the authors.

At the morning session on December 28, Mr. John Murphy, electrical engineer for the Department of Railways and Canals, Ottawa, gave an address on "Ice Formation and Prevention with Special Reference to Frazil and Anchor Ice." Mr. Murphy advocated keeping certain metal parts of hydro-electric installations a small fraction of a degree above 32°F. with the aid of artificial heat. This can be and is being done at certain plants on the Ottawa River to which Mr. Murphy made reference. "Engineering Standardization" was discussed by Mr. R. J. Durley, secretary of the Canadian Engineering Standards Association. Other papers were "Fifty Years of Progress in Mining in Canada" by Mr. John E. Hardman, "Metal Mining in Canada," by Thomas W. Gibson, deputy minister of mines, Ontario; "Gold Mining in Canada" by Mr. A. F. Brigham and "Nickel Mining and Smelting" by W. L. Dethloff, chief engineer of the Mond Nickel Company.

The morning session on Thursday, December 29, was given over to an illustrated address on "Toronto Harbor Development" by Mr. George Clark, chief designing engineer of the Toronto Harbor Commission, and to a discussion on Scientific and Industrial Research by Dr. R. A. Ross, chairman of the Honorary Advisory Council for Scientific and Industrial Research, Canada, who emphasized the economic importance of obtaining a satisfactory method of carbonizing the lignites of Western Canada. Mr. H. K. Wicksteed read a paper on "Railway Development in Canada" treating his subject chiefly from an economic standpoint. In the afternoon Messrs. A. M. McQueen and James

McEvoy read papers on "Exploration for Oil in Western Canada" and "Coal Mining in Alberta" respectively. Sir Adam Beck, chairman of the Hydro-Electric Power Commission of Ontario, gave in Convocation Hall an address to all sections of the American Association for the Advancement of Science in the afternoon at 4 o'clock. This address was well attended and was illustrated by motion pictures. Sir Adam drew a comparison between the cost of Niagara generated hydro-electric energy in Windsor, Ont., and steam generated electric energy in Detroit, Mich., the prices being 3½ and 8 cents per kilowatt hour, respectively.

The Friday sessions, with the exception of Mr. D. B. Dowling's address on the Mackenzie oil fields, were given over to the discussion of problems pertaining to Engineering Education. Works Commissioner Harris, City of Toronto, gave the employer's viewpoint with respect to the qualifications of the young engineer. Professor Charles F. Scott, president of the Society for the Promotion of Engineering Education, contributed a paper on "Professional Engineering Education for the Industries." Dr. F. W. Merchant, director of industrial and technical education, Ontario, addressed the section on the function of the secondary technical school. Professor Dugald C. Jackson's paper on the same subject was read by Professor C. R. Young in the absence of the author. Discussion following all of these papers was very general.

Regarding the sessions of the Society for the Promotion of Engineering Education, held at Toronto on December 30, 1921, the reader is referred to the *Canadian Engineer*, Vol. 42, No. 1, p. 109, Jan. 3, 1922, and Vol. 12, No. 2, p. 133, Jan. 10, 1922.

The closing function was a dinner in Hart House on Friday evening at which one hundred were present. Mr. J. B. Tyrrell, chairman of the section, presided at all sessions. The committee in charge of arrangements consisted of the chairman, Mr. Tyrrell, and Professors R. W. Angus, Peter Gillespie and C. R. Young, all three of the University of Toronto.

PETER GILLESPIE,

*Acting Secretary, Section M*

TORONTO, CANADA